2018-19

QUALITY CONTROL TEST REPORT

Name of the Client: **Executive Engineer,** Dasarahalli Division, BBMP, Bangalore.

Agency: **Sri. M.S.Venkatesh,** Contractor, Bangalore.

Name of the Work: Improvements of re-asphalting Dasarahalli Main Road & other Roads , S Ramaiash, Ganesha Sawmill, Kempegowda Nagara & Maheshwari Nagara Roads Construction drain and Concrete Main roads &Cross roads of Vidyanagara Dasarahalli Ward No:15&39 (6-works) Package No. DZ 2017-18-(05), BBMP, Bangalore.

PROJECT MANAGEMENT CONSULTANTS

M/s. CIVIL QUALITY CONSULTANTS & ENGINEERS

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JAS-ANZ
ISO 9001:2000 CERTIFIED

Job No.: CQCE/BBMP/MSV/QC/2018-19

Date: 15.02.2019

PRECAST SLAB 100mm Thick(CORE) TEST REPORT

Client	:	**Executive Engineer,** Dasarahalli Division, BBMP, Bangalore.
Contractor	:	**Sri. M S Venkatesh,** Contractor, Bangalore.
Name of Work	:	Improvements of re-asphalting Dasarahalli Main Road & other Roads , S Ramaiash, Ganesha Sawmill, Kempegowda Nagara & Maheshwari Nagara Roads Construction drain and Concrete Main roads &Cross roads of Vidyanagara Dasarahalli Ward No:15&39 (6-works) Package No. DZ 2017-18-(05), BBMP, Bangalore.
No.of Sample Tested	:	03
Date of Testing	:	15.02.2019
Techinical Reference	:	IS:516-1959 (Reaffirmed 1999), SP-24:1983.
Grade of Concrete	:	M_{20}

Sl. No.	Dia of Core D (mm)	Height of Core H (mm)	Core Wt (Kg)	Density of Core (kg / m^3)	H / D	Correction factor (Based on H/D)	Failure Load (kN)	Core Strength (N/mm^2)	Correction Factor for the Dia. (Strength of the Core x 1.08)	Corrected Cylinder Compressive Strength (N/mm^2)	Equivalent Cube Compressive Strength (N/mm^2)
1	50.00	75.00	0.341	2315.60	1.50	0.960	34.20	17.42	18.81	18.06	22.57
2	50.00	76.00	0.349	2338.74	1.52	0.960	35.60	18.13	19.58	18.80	23.50
3	50.00	78.00	0.361	2357.13	1.56	0.960	33.90	17.27	18.65	17.90	22.38

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Job No.: CQCE/BBMP/MSV/QC/2018-19 Date : 28.02.2019

GRADATION FOR WMM
MORTH TABLE-400-11

Client : **Executive Engineer,** Dasarahalli Division, BBMP, Bangalore.

Agency : **Sri. M S Venkatesh,** Contractor, Bangalore.

Name of Work : Improvements of re-asphalting Dasarahalli Main Road & other Roads , S Ramaiash, Ganesha Sawmill, Kempegowda Nagara & Maheshwari Nagara Roads Construction drain and Concrete Main roads &Cross roads of Vidyanagara Dasarahalli Ward No:15&39 (6-works) Package No. DZ 2017-18-(05), BBMP, Bangalore.

Date of Testing : 28.02.2019

Material Type : Wet Mix Macadam

Oven Dry Wt (gm): **10000**

Is Sieve Size in mm	Weight Retained (gm)	Cumulative Weight Retained (gm)	Cumulative % of Retained	Cumulative % of Passing	Spec.Limits
53	0	0	0	100	100
45	257	257	2.6	97.4	95-100
22.4	2543	2800	28.0	72.0	60-80
11.2	2763	5563	55.6	44.4	40-60
4.75	1543	7106	71.1	28.9	25-40
2.36	1027	8133	81.3	18.7	15-30
0.600	387	8520	85.2	14.8	8-22
0.075	796	9316	93.2	6.8	0-8

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Job No.: CQCE/BBMP/MSV/QC/2018-19 Date : 28.02.2019

GRADATION FOR WMM
MORTH TABLE-400-11

Client : **Executive Engineer,** Dasarahalli Division, BBMP, Bangalore.

Agency : **Sri. M S Venkatesh,** Contractor, Bangalore.

Name of Work : Improvements of re-asphalting Dasarahalli Main Road & other Roads , S Ramaiash, Ganesha Sawmill, Kempegowda Nagara & Maheshwari Nagara Roads Construction drain and Concrete Main roads &Cross roads of Vidyanagara Dasarahalli Ward No:15&39 (6-works) Package No. DZ 2017-18-(05), BBMP, Bangalore.

Date of Testing : 28.02.2019

Material Type : Wet Mix Macadam

Oven Dry Wt (gm): **10000**

Is Sieve Size in mm	Weight Retained (gm)	Cumulative Weight Retained (gm)	Cumulative % of Retained	Cumulative % of Passing	Spec.Limits
53	0	0	0	100	100
45	249	249	2.5	97.5	95-100
22.4	2540	2789	27.9	72.1	60-80
11.2	2736	5525	55.3	44.8	40-60
4.75	1563	7088	70.9	29.1	25-40
2.36	1020	8108	81.1	18.9	15-30
0.600	398	8506	85.1	14.9	8-22
0.075	756	9262	92.6	7.4	0-8

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Job No.: CQCE/BBMP/MSV/QC/2018-19 **Date:** 28.02.2019

Aggregate Impact Value

IS: 2386 Part IV

Client	**Executive Engineer,** Dasarahalli Division, BBMP, Bangalore.
Agency	**Sri. M S Venkatesh,** Contractor, Bangalore.
Name of the Work	Improvements of re-asphalting Dasarahalli Main Road & other Roads , S Ramaiash, Ganesha Sawmill, Kempegowda Nagara & Maheshwari Nagara Roads Construction drain and Concrete Main roads &Cross roads of Vidyanagara Dasarahalli Ward No:15&39 (6-works) Package No. DZ 2017-18-(05), BBMP, Bangalore.
Type of Mix	Wet Mix Macadam
Date of Testing	28.02.2019

Sl No.	Details	Trial No. 1	2	3	Average
1	Total weight of aggregate sample filling the cylindrical measure = W_1 g	382	386	388	
2	Weight of agregate passing 2.36 mm sieve after the test = W_2 g	90	92	94	
3	Weight of aggregate retained 2.36 mm sieve after the test = W_3 g	292	294	294	
4	Aggregate Impact value = percent fines 100* (W_2/W_1)%	23.56	23.83	24.23	23.87

Comments:

→ Maximum allowable Aggregate Impact value for Wet mix Macadam is 30%

Note:

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Job No.: CQCE/BBMP/MSV/QC/2018-19 28.02.2019

DETERMINATION OF FLAKINESS INDEX & ELONGATION INDEX OF COARSE AGGREGATES

Client	**Executive Engineer,** Dasarahalli Division, BBMP, Bangalore.
Agency	**Sri. M S Venkatesh,** Contractor, Bangalore.
Name of Work	Improvements of re-asphalting Dasarahalli Main Road & other Roads , S Ramaiash, Ganesha Sawmill, Kempegowda Nagara & Maheshwari Nagara Roads Construction drain and Concrete Main roads &Cross roads of Vidyanagara Dasarahalli Ward No:15&39 (6-works) Package No. DZ 2017-18-(05), BBMP, Bangalore.
Technical Reference	IS 2386(Part 1) 1963 (RA 2011)
Type of Mix	Wet Mix Macadam
Sample ID	WMM Layer
Date of Testing	28.02.2019

Result : Flakiness Index = **11.65%**

Elongation Index = **13.69%**

Result : Combined Flakiness & Elongation index 25.34%

Comments:

Maximum allowable Flakiness & Elongation Index for Wet Mix Macadam is 30%

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Job No.: CQCE/BBMP/MSV/QC/2018-19 Date : 28.02.2019

ATTERBERG LIMITS TEST FOR WMM
MORTH TABLE-400-11

Client : **Executive Engineer,** Dasarahalli Division, BBMP, Bangalore.

Agency : **Sri. M S Venkatesh,** Contractor, Bangalore.

Name of Work : Improvements of re-asphalting Dasarahalli Main Road & other Roads , S Ramaiash, Ganesha Sawmill, Kempegowda Nagara & Maheshwari Nagara Roads Construction drain and Concrete Main roads &Cross roads of Vidyanagara Dasarahalli Ward No:15&39 (6-works) Package No. DZ 2017-18-(05), BBMP, Bangalore.

Date of Testing : 28.02.2019

Material Type : Wet Mix Macadam

As per MORTH Table 400-13

Sl. No.	Particulars	Test Results	Standards as per Specifications
1	Liquid Limit	23.00	-
2	Plasticity Index, %	Non Plastic	6.0% Maximum.

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Job No.: CQCE/BBMP/MSV/QC/2018-19 Date : 28.02.2019

ATTERBERG LIMITS TEST FOR WMM
MORTH TABLE-400-11

Client : **Executive Engineer,** Dasarahalli Division, BBMP, Bangalore.

Agency : **Sri. M S Venkatesh,** Contractor, Bangalore.

Name of Work : Improvements of re-asphalting Dasarahalli Main Road & other Roads , S Ramaiash, Ganesha Sawmill, Kempegowda Nagara & Maheshwari Nagara Roads Construction drain and Concrete Main roads &Cross roads of Vidyanagara Dasarahalli Ward No:15&39 (6-works) Package No. DZ 2017-18-(05), BBMP, Bangalore.

Date of Testing : 28.02.2019

Material Type : Wet Mix Macadam

As per MORTH Table 400-13

Sl. No.	Particulars	Test Results	Standards as per Specifications
1	Liquid Limit	22.50	-
2	Plasticity Index, %	Non Plastic	6.0% Maximum.

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Job No.: CQCE/BBMP/MSV/QC/2018-19 Date: 14.03.2019

TEST REPORT

Client	:	**Executive Engineer,** Dasarahalli Division, BBMP, Bangalore.
Agency	:	**Sri. M S Venkatesh,** Contractor, Bangalore.
Name of the work	:	Improvements of re-asphalting Dasarahalli Main Road & other Roads , S Ramaiash, Ganesha Sawmill, Kempegowda Nagara & Maheshwari Nagara Roads Construction drain and Concrete Main roads &Cross roads of Vidyanagara Dasarahalli Ward No:15&39 (6-works) Package No. DZ 2017-18-(05), BBMP, Bangalore.
Source of location	:	Hot mix Plant, Bangalore
Date of testing	:	14.03.2019

The results of the tests conducted on the bitumen sample using for Bituminous Macadam

Sl. No	Description	Test Result	Requirement as per IS:73:2013
1	Penetration at 25 °C, 1/10 mm	69	60 to 70
2	Softening point, °C	48	Min. 45
3	Ductility at 27°C, cm	100 >	Min. 50
4	Flash Point, °C	306	Min. 220

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Job No.: CQCE/BBMP/MSV/QC/2018-19 Date: 14.03.2019

Aggregate Impact Value

IS: 2386 Part IV

Client	**Executive Engineer,** Dasarahalli Division, BBMP, Bangalore.
Agency	**Sri. M S Venkatesh,** Contractor, Bangalore.
Name of the Work	Improvements of re-asphalting Dasarahalli Main Road & other Roads , S Ramaiash, Ganesha Sawmill, Kempegowda Nagara & Maheshwari Nagara Roads Construction drain and Concrete Main roads &Cross roads of Vidyanagara Dasarahalli Ward No:15&39 (6-works) Package No. DZ 2017-18-(05), BBMP, Bangalore.
Source / Location	Hotmix Plant, Bangalore
Type of Mix	Bituminous Macadam
Date of Testing	14.03.2019

Sl No.	Details	Trial No. 1	Trial No. 2	Trial No. 3	Average
1	Total weight of aggregate sample filling the cylindrical measure = W_1 g	384	386	388	
2	Weight of agregate passing 2.36 mm sieve after the test = W_2 g	84	86	88	
3	Weight of aggregate retained 2.36 mm sieve after the test = W_1 g	300	300	300	
4	Aggregate Impact value = percent fines	21.88	22.28	22.68	
	100* (W_2/W_1)%				22.28

Comments:

→ Maximum allowable Aggregate Impact value for Bituminous Macadam is 30%

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Job No.: CQCE/BBMP/MSV/QC/2018-19 14.03.2019

DETERMINATION OF FLAKINESS INDEX & ELONGATION INDEX OF COARSE AGGREGATES

Client	**Executive Engineer,** Dasarahalli Division, BBMP, Bangalore.
Agency	**Sri. M S Venkatesh,** Contractor, Bangalore.
Name of Work	Improvements of re-asphalting Dasarahalli Main Road & other Roads , S Ramaiash, Ganesha Sawmill, Kempegowda Nagara & Maheshwari Nagara Roads Construction drain and Concrete Main roads &Cross roads of Vidyanagara Dasarahalli Ward No:15&39 (6-works) Package No. DZ 2017-18-(05), BBMP, Bangalore.
Technical Reference	IS 2386(Part 1) 1963 (RA 2011)
Type of Mix	Bituminous Macadam
Date of Testing	14.03.2019

Result : Flakiness Index = **12.57%**

Elongation Index = **14.36%**

Result : Combined Flakiness & Elongation index **26.93%**

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Job No.: CQCE/BBMP/MSV/QC/2018-19 **Date:** 14.03.2019

Specific Gravity And Water Absorption Test

IS: 2386 Part III

Client	**Executive Engineer,** Dasarahalli Division, BBMP, Bangalore.
Agency	**Sri. M S Venkatesh,** Contractor, Bangalore.
Name of the Work	Improvements of re-asphalting Dasarahalli Main Road & other Roads , S Ramaiash, Ganesha Sawmill, Kempegowda Nagara & Maheshwari Nagara Roads Construction drain and Concrete Main roads &Cross roads of Vidyanagara Dasarahalli Ward No:15&39 (6-works) Package No. DZ 2017-18-(05), BBMP, Bangalore.
Source / Location	Hotmix Plant, Bangalore.
Type of Mix	Bituminous Macadam
Date of Testing	14.03.2019

Sl. No.	Details	Notation	Test Number			Mean Value
			Test 1	Test 2	Test 3	
1	Weight of aggregate suspended in water with the basket	W_1 g	2020	2022	2021	
2	Weight of basket suspended in water	W_2 g	755	755	755	
3	Weight of saturated aggregate in water	$(W_1 - W_2) = W_s$ g	1265	1267	1266	
4	Weight of saturated surface dry aggregate in air	W_3 g	2016	2018	2019	
5	Weight of water equal to the volume of the aggregate	$(W_3 - W_S)$ g	752	752	752	
6	Weight of oven dried aggregate	W_4 g	2009	2010	2011	
7	Specific Gravity	$W_4/(W_3-W_S)$	2.675	2.676	2.671	2.673
8	Apparent Specific gravity	$W_4/(W_4-W_S)$	2.700	2.705	2.699	2.700
9	Water Absorption	$((W_3-W_4)*100)/W_4$	0.35%	0.40%	0.40%	0.37%

Comments:

→ Maximum allowable Aggregate Water absorption value for Bituminous Macadam is 2.0%

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Job No.: CQCE/BBMP/MSV/QC/2018-19 Date: 15.03.2019

Aggregate Gradation Test
IS : 2386 Part I

Client	**Executive Engineer,** Dasarahalli Division, BBMP, Bangalore.
Agency	**Sri. M S Venkatesh,** Contractor, Bangalore.
Name of the work	Improvements of re-asphalting Dasarahalli Main Road & other Roads , S Ramaiash, Ganesha Sawmill, Kempegowda Nagara & Maheshwari Nagara Roads Construction drain and Concrete Main roads &Cross roads of Vidyanagara Dasarahalli Ward No:15&39 (6-works) Package No. DZ 2017-18-(05), BBMP, Bangalore.
Sample ID	Hotmix Plant, Bangalore.
Type of Mix	Bituminous Macadam
Date of Testing	15.03.2019

5250 gm

SIEVE SIZE, mm	Weight Retained, gm	% Retained	Cummulative % Retained	% Passing	Grade-II As per MORTH	Remarks
26.5	0	0	0	100	100	Gradation satisfies Grade-II MORTH specification
19	356	6.78	6.78	93.22	90-100	
13.2	1640	31.24	38.02	61.98	56-88	
4.75	1528	29.10	67.12	32.88	16-36	
2.36	1242	23.66	90.78	9.22	4-19	
0.3	169	3.22	94.00	6.00	2-10	
0.075	59	1.12	95.12	4.88	0-8	

Total Weight of Sample: 5050 gm

SIEVE SIZE, mm	Weight Retained, gm	% Retained	Cummulative % Retained	% Passing	Grade-II As per MORTH	Remarks
26.5	0	0	0	100	100	Gradation satisfies Grade-II MORTH specification
19	264	5.23	5.23	94.77	90-100	
13.2	1480	29.31	34.53	65.47	56-88	
4.75	1532	30.34	64.87	35.13	16-36	
2.36	956	18.93	83.80	16.20	4-19	
0.3	510	10.10	93.90	6.10	2-10	
0.075	49	0.97	94.87	5.13	0-8	

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Job No.: CQCE/BBMP/MSV/QC/2018-19 Date: 15.03.2019

BITUMEN CONTENT AND GRADATION DETERMINATION OF BITUMINOUS MACADAM MIX

AASHTO T 164 & AASHTO T 30

CLIENT	**Executive Engineer,** Dasarahalli Division, BBMP, Bangalore.
AGENCY	**Sri. M S Venkatesh,** Contractor, Bangalore.
NAME OF THE WORK	Improvements of re-asphalting Dasarahalli Main Road & other Roads , S Ramaiash, Ganesha Sawmill, Kempegowda Nagara & Maheshwari Nagara Roads Construction drain and Concrete Main roads &Cross roads of Vidyanagara Dasarahalli Ward No:15&39 (6-works) Package No. DZ 2017-18-(05), BBMP, Bangalore.
SAMPLE I/D	Sample Supplied by Agency
DATE OF TESTING	15.03.2019

BITUMEN CONTENT DETERMINATION

Description	Trail 1	Trail 2
1. Weight of Mixture before Test, g	500	500
2. Weight of Mixture after Test, g	481.5	482
3. Weight of Asphalt and Mineral matter Extracted,	-	-
4. Weight of Mineral Matter, g.	-	-
5. Weight of Ash, g		
6. Weight of Bitumen Extracted, g. (corrected)	18.5	18.00
7. Bitumen content in %	3.70	3.60
8. Average	**3.65**	

GRADATION AFTER EXTRACTION

SIEVE SIZE	Trail 1				JOBMIX
mm	Weight Retained, gm	% Retained	%Cummulative Retained	% Passing	Gradation
26.5	0	0	0	100	100
19	25.8	5.36	5.36	94.64	90-100
13.2	149	30.94	36.30	63.70	56-88
4.75	176.3	36.61	72.92	27.08	16-36
2.36	64.2	13.33	86.25	13.75	4-19
0.3	38.9	8.08	94.33	5.67	2-10
0.075	14.5	3.01	97.34	2.66	0-8

SIEVE SIZE	Trail 2				JOBMIX
mm	Weight Retained, gm	% Retained	%Cummulative Retained	% Passing	Gradation
26.5	0	0	0	100	100
19	25.8	5.16	5.16	94.84	90-100
13.2	154.2	30.84	36.00	64.00	56-88
4.75	196.3	39.26	75.26	24.74	16-36
2.36	98.5	19.70	94.96	5.04	4-19
0.3	5.46	1.09	96.05	3.95	2-10
0.075	12.89	2.58	98.63	1.37	0-8

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Job No.: CQCE/BBMP/MSV/QC/2018-19 Date: 22.03.2019

TEST REPORT

Client	:	**Executive Engineer,** Dasarahalli Division, BBMP, Bangalore.
Agency	:	**Sri. M S Venkatesh,** Contractor, Bangalore.
Name of the work	:	Improvements of re-asphalting Dasarahalli Main Road & other Roads , S Ramaiash, Ganesha Sawmill, Kempegowda Nagara & Maheshwari Nagara Roads Construction drain and Concrete Main roads &Cross roads of Vidyanagara Dasarahalli Ward No:15&39 (6-works) Package No. DZ 2017-18-(05), BBMP, Bangalore.
Source of location	:	Hot mix Plant, Bangalore
Date of testing	:	22.03.2019

The results of the tests conducted on the bitumen sample using for Bituminous Concrete

Sl. No	Description	Test Result	Requirement as per IS:73:2013
1	Penetration at 25 °C, 1/10 mm	65	60 to 70
2	Softening point, °C	49	Min. 40
3	Ductility at 27°C, cm	100 >	Min. 75
4	Flash Point, °C	296	Min. 220

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Job No.: CQCE/BBMP/MSV/QC/2018-19 Date: 22.03.2019

Aggregate Impact Value

IS: 2386 Part IV

Client	**Executive Engineer,** Dasarahalli Division, BBMP, Bangalore.
Agency	**Sri. M S Venkatesh,** Contractor, Bangalore.
Name of the Work	Improvements of re-asphalting Dasarahalli Main Road & other Roads , S Ramaiash, Ganesha Sawmill, Kempegowda Nagara & Maheshwari Nagara Roads Construction drain and Concrete Main roads &Cross roads of Vidyanagara Dasarahalli Ward No:15&39 (6-works) Package No. DZ 2017-18-(05), BBMP, Bangalore.
Source / Location	Hot Mix Plant, Bangalore
Type of Mix	Bituminous Concrete
Date of Testing	22.03.2019

Sl No.	Details	Trial No.		Average
		1	2	
1	Total weight of aggregate sample filling the cylindrical measure = W_1 g	380	382	
2	Weight of agregate passing 2.36 mm sieve after the test = W_2 g	86	88	
3	Weight of aggregate retained 2.36 mm sieve after the test = W_3 g	294	294	
4	Aggregate Impact value = percent fines			
	100* (W_2/W_1) percent	22.63	23.04	**22.83**

Comments:

→ Maximum allowable Aggregate Impact value for Bituminous Concrete is 24%

Note:

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Job No.: CQCE/BBMP/MSV/QC/2018-19 22.03.2019

DETERMINATION OF FLAKINESS INDEX & ELONGATION INDEX OF COARSE AGGREGATES

Client	**Executive Engineer,** Dasarahalli Division, BBMP, Bangalore.
Agency	**Sri. M S Venkatesh,** Contractor, Bangalore.
Name of Work	Improvements of re-asphalting Dasarahalli Main Road & other Roads , S Ramaiash, Ganesha Sawmill, Kempegowda Nagara & Maheshwari Nagara Roads Construction drain and Concrete Main roads &Cross roads of Vidyanagara Dasarahalli Ward No:15&39 (6-works) Package No. DZ 2017-18-(05), BBMP, Bangalore.
Technical Reference	IS 2386(Part 1) 1963 (RA 2007)
Type of Mix	Bituminous Concrete
Date of Testing	22.03.2019

Result : Flakiness Index = **11.52%**

Elongation Index = **13.30%**

Result : Combined Flakiness & Elongation index **24.82%**

Comments:

→ Maximum allowable Flakiness & Elongation Index for Bituminous Concrete is 30%

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Job No.: CQCE/BBMP/MSV/QC/2018-19 22.03.2019

Specific Gravity And Water Absorption Test
IS: 2386 Part III

Client	**Executive Engineer,** Dasarahalli Division, BBMP, Bangalore.
Agency	**Sri. M S Venkatesh,** Contractor, Bangalore.
Name of the Work	Improvements of re-asphalting Dasarahalli Main Road & other Roads , S Ramaiash, Ganesha Sawmill, Kempegowda Nagara & Maheshwari Nagara Roads Construction drain and Concrete Main roads &Cross roads of Vidyanagara Dasarahalli Ward No:15&39 (6-works) Package No. DZ 2017-18-(05), BBMP, Bangalore.
Type of Mix	Bituminous Concrete
Date of Testing	22.03.2019

Sl. No.	Details	Notation	Test Number			Mean Value
			Test 1	Test 2	Test 3	
1	Weight of aggregate suspended in water with the basket	W_1 g	2019	2021	2023	
2	Weight of basket suspended in water	W_2 g	754	754	754	
3	Weight of saturated aggregate in water	$(W_1 - W_2) = W_s$ g	1265	1267	1269	
4	Weight of saturated surface dry aggregate in air	W_3 g	2014	2016	2018	
5	Weight of water equal to the volume of the aggregate	$(W_3 - W_S)$ g	753	753	753	
6	Weight of oven dried aggregate	W_4 g	2009	2010	2011	
7	Specific Gravity	$W_4/(W_3-W_S)$	2.682	2.684	2.685	2.684
8	Apparent Specific gravity	$W_4/(W_4-W_S)$	2.700	2.705	2.710	2.705
9	Water Absorption	$((W_3-W_4)*100)/W_4$	0.25%	0.30%	0.35%	0.30%

Comments:
→ Maximum allowable Aggregate Water absorption value for Bituminous Concrete is 2.0%

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Aggregate Gradation Test

IS : 2386 Part I

Client	**Executive Engineer,** Dasarahalli Division, BBMP, Bangalore.
Agency	**Sri. M S Venkatesh,** Contractor, Bangalore.
Name of theWork	Improvements of re-asphalting Dasarahalli Main Road & other Roads , S Ramaiash, Ganesha Sawmill, Kempegowda Nagara & Maheshwari Nagara Roads Construction drain and Concrete Main roads &Cross roads of Vidyanagara Dasarahalli Ward No:15&39 (6-works) Package No. DZ 2017-18-(05), BBMP, Bangalore.
Sample I / D	Hot Mix Plant, Bangalore
Type of Mix	Bituminous Concrete
Date of Testing	23.03.2019

Total Weight of Sample: **5000** gm

SIEVE SIZE, mm	Weight Retained, gm	% Retained	Cummulative % Retained	% Passing	JOBMIX Gradation as per MORTH	Remarks
19	0	0	0	100	100	Gradation satisfies Bituminous concrete Grade-II specification as per MORTH
13.2	348	6.96	6.96	93.04	79 - 100	
9.5	560	11.20	18.16	81.84	70 - 88	
4.75	758	15.16	33.32	66.68	53 - 71	
2.36	620	12.40	45.72	54.28	42 - 58	
1.18	548	10.96	56.68	43.32	34 - 48	
0.600	630	12.60	69.28	30.72	26 - 38	
0.300	288	5.76	75.04	24.96	18 - 28	
0.150	446	8.92	83.96	16.04	12 - 20	
0.075	470	9.40	93.36	6.64	4 - 10	

Total Weight of Sample: **5000** gm

SIEVE SIZE, mm	Weight Retained, gm	% Retained	Cummulative % Retained	% Passing	JOBMIX Gradation as per MORTH	Remarks
19	0	0	0	100	100	Gradation satisfies Bituminous concrete Grade-II specification as per MORTH
13.2	389	7.78	7.78	92.22	79 - 100	
9.5	536	10.72	18.50	81.50	70 - 88	
4.75	740	14.80	33.30	66.70	53 - 71	
2.36	625	12.50	45.80	54.20	42 - 58	
1.18	520	10.40	56.20	43.80	34 - 48	
0.600	456	9.12	65.32	34.68	26 - 38	
0.300	330	6.60	71.92	28.08	18 - 28	
0.150	458	9.16	81.08	18.92	12 - 20	
0.075	532	10.64	91.72	8.28	4 - 10	

1203

Note:

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e-mail:civilqualityconsultants@gmail.com Ph: 080-23240644 / Mob: 8553518550

Job No: CQCE/BBMP/MSV/QC/2018-19 Date: 23.03.2019

TEST REPORT ON STABILITY OF MIX

Client	:	**Executive Engineer,** Dasarahalli Division, BBMP, Bangalore.
Agency	:	**Sri. M S Venkatesh,** Contractor, Bangalore.
Name of the Work	:	Improvements of re-asphalting Dasarahalli Main Road & other Roads , S Ramaiash, Ganesha Sawmill, Kempegowda Nagara & Maheshwari Nagara Roads Construction drain and Concrete Main roads &Cross roads of Vidyanagara Dasarahalli Ward No:15&39 (6-works) Package No. DZ 2017-18-(05), BBMP, Bangalore.
Source of location	:	Hot mix Plant, Bangalore
Type of Mix	:	Bituminous Concrete
Date of Testing	:	23.03.2019

The results of the tests conducted on the bituminous concrete mix sample are as follows:

Sl. No	Description	Test Result 1	Test Result 2	Requirement as per MORTH (Table 500-19)
1	Marshal Stability, Kn	10.21	9.85	9 Kn (min)
2	Marshal flow, mm	3.36	2.54	2 – 4
3	Percent air voids in Mineral Aggregate	13.68	14.21	13 – 15
4	Voids in Compacted Mix	3.85	4.12	3 – 6
5	Percent Voids filled with Bitumen	70.98	71.36	65 - 75
6	Density, g/cc	2.27	2.26	--

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Job No.: CQCE/BBMP/MSV/QC/2018-19 02.03.2019

BITUMEN CONTENT AND GRADATION DETERMINATION OF BITUMINOUS CONCRETE

CLIENT	**Executive Engineer,** Dasarahalli Division, BBMP, Bangalore.
AGENCY	**Sri. M S Venkatesh,** Contractor, Bangalore.
NAME OF THE WORK	Improvements of re-asphalting Dasarahalli Main Road & other Roads , S Ramaiash, Ganesha Sawmill, Kempegowda Nagara & Maheshwari Nagara Roads Construction drain and Concrete Main roads &Cross roads of Vidyanagara Dasarahalli Ward No:15&39 (6-works) Package No. DZ 2017-18-(05), BBMP, Bangalore.
SAMPLE I/D	Sample Supplied by Agency
DATE OF TESTING	02.03.2019

BITUMEN CONTENT DETERMINATION

Description	Sample 1	Sample 2
1. Weight of Mixture before Test, g	500	500
2. Weight of Mixture after Test, g	469	468.5
3. Weight of Asphalt and Mineral matter Extracted, g	31	31.5
4. Weight of Mineral Matter, g	-	-
5. Weight of Ash, g	-	-
6. Weight of Bitumen Extracted, g. (corrected)	29	31.5
7. Bitumen content in %	5.80	6.30
8. Average	6.05	

GRADATION AFTER EXTRACTION

TABLE - 1

SIEVE SIZE	Percent Passing, %		JOBMIX
mm	Sample 1	Sample 2	Gradation
19	100.00	100.00	100
13.2	91.35	92.85	79-100
9.5	80.56	81.63	70-88
4.75	66.36	67.15	53-71
2.36	50.56	51.85	42-58
1.18	43.65	42.81	34-48
0.6	33.63	34.58	26-38
0.3	22.20	23.65	18-28
0.15	15.85	16.15	12-20
0.075	7.25	6.98	4-10

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BITUMEN CONTENT AND GRADATION DETERMINATION OF BITUMINOUS CONCRETE

CLIENT	**Executive Engineer,** Dasarahalli Division, BBMP, Bangalore.
AGENCY	**Sri. M S Venkatesh,** Contractor, Bangalore.
NAME OF THE WORK	Improvements of re-asphalting Dasarahalli Main Road & other Roads , S Ramaiash, Ganesha Sawmill, Kempegowda Nagara & Maheshwari Nagara Roads Construction drain and Concrete Main roads &Cross roads of Vidyanagara Dasarahalli Ward No:15&39 (6-works) Package No. DZ 2017-18-(05), BBMP, Bangalore.
SAMPLE I/D	Sample Supplied by Agency
DATE OF TESTING	23.03.2019

BITUMEN CONTENT DETERMINATION

Description	Sample 1	Sample 2
1. Weight of Mixture before Test, g	500	500
2. Weight of Mixture after Test, g	468	467.5
3. Weight of Asphalt and Mineral matter Extracted, g	32	32.5
4. Weight of Mineral Matter, g.	-	-
5. Weight of Ash, g	-	-
6. Weight of Bitumen Extracted, g. (corrected)	29	32.5
7. Bitumen content in %	5.80	6.50
8. Average	6.15	

GRADATION AFTER EXTRACTION

TABLE - 1

SIEVE SIZE	Percent Passing, %		JOBMIX
mm	Sample 1	Sample 2	Gradation
19	100.00	100.00	100
13.2	93.25	94.15	79-100
9.5	83.36	84.51	70-88
4.75	65.56	66.84	53-71
2.36	53.36	54.51	42-58
1.18	40.56	41.84	34-48
0.6	34.26	33.62	26-38
0.3	20.59	21.36	18-28
0.15	16.56	15.52	12-20
0.075	6.35	7.84	4-10

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Job No.: CQCE/BBMP/MSV/QC/2018-19 Date: 27.03.2019

KERB STONE (CORE) TEST REPORT

Client	:	**Executive Engineer,** Dasarahalli Division, BBMP, Bangalore.
Agency	:	**Sri. M S Venkatesh,** Contractor, Bangalore.
Name of Work	:	Improvements of re-asphalting Dasarahalli Main Road & other Roads , S Ramaiah, Ganesha Sawmill, Kempegowda Nagara & Maheshwari Nagara Roads Construction drain and Concrete Main roads &Cross roads of Vidyanagara Dasarahalli Ward No:15&39 (6-works) Package No. DZ 2017-18-(05), BBMP, Bangalore.
No.of Sample Tested	:	03
Date of Testing	:	27.03.2019
Techinical Reference	:	IS:516-1959 (Reaffirmed 1999), SP-24:1983.
Grade of Concrete	:	M_{15}

Sl. No.	Dia of Core D (mm)	Height of Core H (mm)	Core Wt (Kg)	Density of Core (kg / m^3)	H / D	Correction factor (Based on H/D)	Failure Load (kN)	Core Strength (N/mm^2)	Correction Factor for the Dia. (Strength of the Core x 1.08)	Corrected Cylinder Compressive Strength (N/mm^2)	Equivalent Cube Compressive Strength (N/mm^2)
1	50.00	75.00	0.326	2213.74	1.50	0.960	28.30	14.41	15.57	14.94	18.68
2	50.00	77.00	0.347	2295.14	1.54	0.960	27.40	13.95	15.07	14.47	18.09
3	50.00	78.00	0.359	2344.07	1.56	0.960	26.10	13.29	14.36	13.78	17.23

Note:

1. The report shall not be reproduced, except in full, without the written approval of the laboratory.
2. The results indicated above are based on the tests carried out on the samples received in the laboratory.
3. Any Query regarding the report must be reported reported within 30 days from the date of testing.

For CIVIL QUALITY CONSULTANTS & ENGINEERS

ಸಹಾಯಕ ಕಾರ್ಯಪಾಲಕ ಅಭಿಯಂತರರು
ಬಿ ದಾಸರಹಳ್ಳಿ ಉಪ-ವಿಭಾಗ
ಬಾಗಲಗುಂಟೆ, ಬಿಬಿಎಂಪಿ
ಬೆಂಗಳೂರು

Authorised Signatory